

What Is Claimed Is:

1. A method for operating an internal combustion engine having an injection system (100), in particular for a motor vehicle, in which fuel is conveyed into a fuel accumulator (150) by a metering unit (130) and a high-pressure pump (140) and in which the pressure in the fuel accumulator (150) is recorded and regulated by controlling the metering unit (130), wherein an individual characteristics line (iKL), which represents the actual response of the metering unit, is ascertained for the control of the metering unit (130) during operation of the internal combustion engine.

2. The method as recited in Claim 1, wherein the determination of an - initially preferably only provisional - support point for the individual characteristic curve which represents the fuel-mass flow (Q) supplied by the metering unit (130) for the high pressure pump as a function of its control current (I), includes the following steps:

operating the internal combustion engine in a suitable predetermined reference operating point; and

ascertaining the provisional support point of the individual characteristic curve for the reference operating point as a value pair encompassing the fuel-mass flow provided by the metering unit (130) in the reference operating point for the high-pressure pump (140), and the associated electrical control current.

3. The method as recited in Claim 2, wherein the provisional support point is ascertained only when the internal combustion engine has exceeded a predetermined minimum temperature threshold value during operation in the reference operating point.

4. The method as recited in Claim 2 or 3, characterized by the following steps:

determining a plurality of provisional support points for one and the same predefined reference operating point by multiple repetition of the method steps according to Claim 2; and

determining a final support point for the predefined reference operating point by filtering the multitude of preliminary support points.

5. The method as recited in Claim 4, wherein the filtering consists of mean-value generation or of analyzing the determined provisional support points with respect to the question whether the provisional support points lie within a predefined ε -environment about a limit value, the limit value then being defined as final support point.

6. The method as recited in one of the Claims 2 through 5, wherein the determination of the individual characteristic curve includes the following steps:

determining at least two final support points for the individual characteristic curve by repeating the steps as recited in Claim 2 for different, suitably selected reference operating points; and

ascertaining the individual characteristic curve for the actually used metering unit (130) by interpolation of the at least two support points and preferably extrapolation of inflection points of the individual characteristic curve resulting from the interpolation of a plurality of support points.

7. The method as recited in one of the Claims 2 through 6, wherein each reference operating point is defined by a predefined pressure in the fuel accumulator, a predefined injection quantity and/or a predefined rotational speed of the internal combustion engine.

8. The method as recited in one of the Claims 2 through 7, wherein, to ascertain a single individual characteristic curve, the individual reference operating points are placed in different operating states of the internal combustion engine as a function of the vehicle, for instance idle operation, full load or maximum torque.

9. The method as recited in one of the Claims 2 through 5, wherein, to determine a single individual characteristic curve, the individual reference operating points are placed in those operating states of the internal combustion engine as a function of the vehicle in which the internal combustion engine is operated most often upon installation in a vehicle.

10. A computer program having a program code, wherein the program code is configured to carry out the method as recited in one of the Claims 1 through 9.

11. A data carrier characterized by the computer program as recited in Claim 10.

12. A control unit (180) for an internal combustion engine having an injection system (100), in particular for a motor vehicle, in which fuel is conveyed into a fuel accumulator (150) by a metering unit (130) and a high-pressure pump (140) and in which the pressure in the fuel accumulator is recorded and regulated by controlling the metering unit, wherein the control unit (180) is configured to ascertain an individual characteristic curve that represents the actual response of

the metering unit (130) during operation of the internal combustion engine.

13. The control unit (180) as recited in Claim 12, wherein the control unit is configured to determine a correction characteristic curve that represents the difference between the response of the actually used as compared to a standardized metering device during operation of the internal combustion engine, and to determine the individual characteristic curve (iKL) by superpositioning of the correction characteristic curve with a standard characteristic curve (nKL) representing the response of a standardized metering unit.

14. The control unit (180) as recited in Claim 12 or 13, wherein the control unit is configured to control the metering unit (130) taking the previously ascertained individual characteristic curve (iKL) into account.

15. The control unit (180) as recited in Claim 14, wherein the control unit includes:

a pressure-control unit (184) for receiving a system deviation (e) as the difference between an actual pressure and a setpoint pressure in the fuel accumulator (150) and for generating a control signal (x) as dictated by the system deviation (e) on the basis of a standard characteristic curve (nKL) for the metering unit (130), the control signal (x) representing the fuel delivery quantity to be supplied by the metering unit (130) for the high-pressure pump (140) in view of the system deviation (e);

the stored correction characteristic curve (186) for determining a correction component for the control signal (x), which represents a possibly different control and supply

response of the actually used metering unit compared to the standardized metering unit;

an addition or subtraction device (187) for generating a corrected control signal (y) for the metering unit (130) by mathematical linking of the control signal (x) with the correction component, the corrected control signal (y) representing a corrected quantity request with respect to the fuel delivery quantity to be provided by the metering unit (130).

16. The control unit as recited in Claim 14 or 15, wherein the control unit also includes a filter device (188) for generating a stabilized control signal (z) for the metering unit (130) by filtering the corrected control signal (y).

17. An internal combustion engine, in particular for a motor vehicle, having an injection system (100) in which fuel is conveyed into a fuel accumulator (150) by a metering unit (130) and a high-pressure pump (140) and in which the pressure in the fuel accumulator (150) is recorded and regulated by controlling the metering unit with the aid of a control unit (180), wherein the control unit (180) is configured to ascertain an individual characteristic curve that represents the actual response of the metering unit (130) during operation of the internal combustion engine and/or to control the metering unit by the individual characteristic curve.